



Mycelium



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What?

- Mycelium
 - Web-like mushroom roots grown in a sterilized substrate to become a styrofoam-like material
- “Essential” Ingredients:
 - Mushroom spores (Mycelium Running Oyster Patch)
 - Substrate (cereal straw)
- Mycelium spores found online came with detailed instructions on different growing methods
 - We chose the peroxide method

What?

- How we grew our mycelium
 - KEPT EVERYTHING SANITIZED (wore gloves)
 - Placed substrate (straw) in a measured hydrogen peroxide and water solution
 - Let substrate soak for a day
 - Rinsed and drained out substrate
 - Mixed substrate and spores together
 - Placed mixture in a container with holes on the lid
 - Left in indirect sunlight; nature took care of the rest



What?

- We check on it daily and it grows on its own
- Peroxide method has been successful so far
 - Incredibly low-maintenance and cheap
 - Mycelium takes care of itself after sterilization and mixture

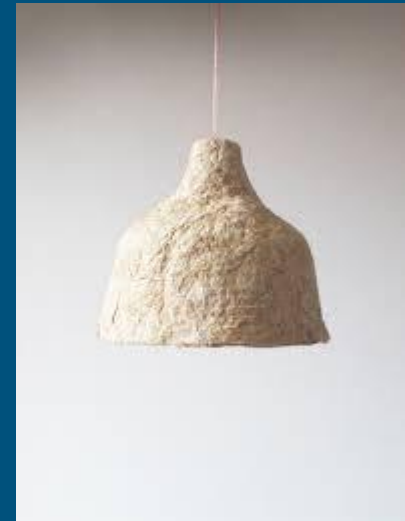


So What?

- Mycelium: easy to come upon, doable to grow, low-maintenance, fascinating
 - implications
 - Found in any place where mushrooms grow, also orderable from website
 - Simple growth process; sanitization, mixture, then let it grow
 - Can grow into any shape with a mold or scaffold
 - Myriad of opportunities for students, no dead end
 - Tons of ideas and real world applications
 - Mycelium: coolers, tables, cups, lampshades, leather
 - Inspiration everywhere
- Fits both the “green” and “engineering” parts of Greengineering
 - Green: all-natural, biodegradable substance cultivated with other non-harmful substances
 - Engineering: innovative material with exciting potential and endless applications

So What?

- We hope that groups in the future can experiment with Mycelium more
- There are many products that can be created with mycelium
 - Packaging - “mycelium” peanuts and boxes
 - Cups, food containers, refrigerators
 - Furniture - tables, chairs, shelves
 - Planters, vases
 - Lampshades
 - Book covers
 - Mats
 - A DIY growing kit for others





Now What?

- Although we have not harvested “usable” mycelium, we are hoping to:
 - Compare growth methods
 - steam vs. hydrogen peroxide method
 - Previous groups used steam method, seemed harder and less effective
 - We hope to find the best method for ourselves and future Greengineers to use
 - Figure out how to improve our system
 - Handling substrate (how to cut it up, manageable but effective quantities), optimal location to grow mycelium
 - Control the quality and characteristics of the final product
 - Type of mycelium → impact on our final product
 - Final product → softer and more flexible, or a rigid solid

Now What? -Compare Peroxide and Steam methods

- Came into mycelium with little knowledge of what past groups did
 - Knew difficult reputation of pressure cooker
 - Found peroxide method on old, obscure website
 - Also happened to be in the instruction manual
 - No complications so far
- Peroxide method working, but we may also have success with the steam method
 - Or we notice a difficulty that the peroxide method avoids
 - Or we notice something good that the peroxide method lacks
 - Comparisons to see which side tips scale for most effective/efficient

Now What? -Compare Peroxide and Steam methods

- Make information accessible to future Greengineers
 - Regular wiki updates with progress on each method
 - Leave instructions we got with our mycelium
 - Any pointers/tricks/discoveries → all recorded, on Wiki
 - Research on optimal conditions for mushroom types
- Foundation to explore possibilities
 - Nothing substantial from past groups
 - We'll give groups a solid starting point

Now What? -Control the quality and characteristics of the final product

1. Grow mycelium in a controlled environment
 - a. Indirect sunlight & room temperature
2. Placed in airtight plastic bags (1/2 cup)
3. Each bag will be placed in a location that match the combination of factors



Now What? -Control the quality and characteristics of the final product

- Factors:
 - Temperature
 - Light
- Direct sunlight w/ Room temperature
- Direct sunlight w/ Cold temperature
- Indirect sunlight w/ Room temperature
- Indirect sunlight w/ Cold temperature
- No light w/ Room temperature
- No light w/ Cold temperature

Now What?- Control the quality and characteristics of the final product

1. Shaping mycelium w/ different molds
2. Once we find the most effective method of growing mycelium, we will grow more using that method.
3. After seeing progress with the mycelium growth, we will place the material in a mold
4. This mold can be 3D printed
5. In a few weeks, the mycelium will have grown into a bowl

Bibliography

https://www.google.com/search?q=mycelium+lamps&safe=active&rlz=1C1CHBF_enUS739US739&source=lnms&tbm=isch&sa=X&ved=0ahUKEwjHg6H0u9LTAhXM6YMKHQEQAK0Q_AUICygC&biw=1366&bih=638#imgsrc=1AAGy_EcKmkIvM:

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